On Track Learning
Car Design Packet

Objectives : To design a self-propelled car that will:

1. Protect its egg-passenger in crashes down a ramp set a multiple heights.
2. Travel at high speeds or for long distances

Testing procedure:

Egg Safety Test

- You may use any or all of the materials provided. But you cannot use anything else! There can be no substitution of supplies.
- A ramp will be set up at progressively multiple heights and the vehicle will crash near the bottom of the ramp into a wall or other barrier provided by the teacher.
- There will be no practice runs.
- After each safety test, teams will have thirty seconds to remove the egg from the car and examine it (the egg) for any breaks or cracks.
- Once the egg has a break or *any crack*, the car can no longer participate in testing.
- Designs will be tested until each egg has broken or cracked.
- Each new round of testing will start with an increase in the height of the ramp.
- You will be allowed to make quick repairs between runs to the harness but may not use any additional supplies.

Performance Test

- The teacher will set up a long straight track that runs the length of the classroom for testing the cars' performance.
- Each team must choose to design their car for speed or distance.
- Speed will be testing by timing how fast the car passes a marked two-yard line.
- Distance will be measured by how far the car travels on the track.
- Though your team will design for speed or distance, both scores will be recorded.

Group number:

Group members (name and role):

1.

2.

3.

4.

5.

6.

Before using any of the materials, brainstorm design ideas. Write these ideas -- good, bad, or ugly -- in the space below. Use the backside of this sheet if necessary.

Write a few paragraphs describing your process from brainstorming to agreeing upon a final design. Some things to discuss include how you eliminated ideas, how the expert interviews guided your decisions or changed your minds, and how the members of the group handled any disagreements. Share anything else that happened along the way.

On a separate sheet of paper, provide a technical drawing of your final car design. While this drawing will be completed before you begin construction of the car, you can alter design aspects later if you run into problems or find a better method to meet your objectives.

On another separate sheet of paper, draw your safety harness and label the materials.

List the materials you will use.

Construction of the car:

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Egg safety device:

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In the space, below describe any deviations you made to your original design. Share what triggered these changes and how the group worked together (or didn't) when a change was needed.

What are at least three design features that your group incorporated to keep the egg safe?

How many rides down the ramp did your egg have before it cracked?

Describe and draw the injuries to your egg.

In comparing different designs in your class, what did you notice about the safety designs of vehicles in which the egg was the safest?

What did you notice about the safety designs of vehicles where the egg was the least safe?

If your group were to make two changes in your design, what would they be?

How did your team work? Describe how your team approached the design challenge.

How did your team arrive at decisions? How did your team handle conflict?

Each member of the group should list his or her name and role in the car design group. Explain your contributions to the project.

1.

2.

3.

4.

5.

6.